

of barium to full redness pure oxygen is given off. At this stage of the process the retorts are evacuated by a powerful pump, so that the operation takes place in a vacuum or nearly so. The operations are continuous, and as long as the baryta is kept anhydrous and free from carbonic acid the same quantity will apparently last an indefinite time. The most interesting and perhaps the most useful part of this invention, or application, is the production of ammonia by a very direct process. The nitrogen obtained as above is passed over a mixture of baryta with carbon—charcoal—heated to some unknown temperature, about 300° C., certainly not higher. It is necessary, however, that the nitrogen be moist, a condition which is attained by passing it through water before it comes in contact with the mixture of baryta and charcoal. The product is really a carbonate of ammonia and not free ammonia, the water becoming decomposed under the conditions named, its hydrogen combining with the nitrogen and its oxygen forming carbonic acid. The ammonium compound seems to be formed in considerable amount, and the process should, when carried out on a large scale, be a valuable one.

A USEFUL summary of anthropological work accomplished during the year 1884 has just been issued by Prof. O. T. Mason, curator of the ethnological department, National Museum, Washington. Besides a copious bibliography of the subject, special notices and even extracts are given of the more important papers on ethnology, archaeology, and other branches of anthropology that have appeared in the scientific periodicals of Europe and America. Thus detailed reference is made to the work of the British Association Anthropometrical Committee; to Prof. W. H. Flower's paper in the *Journal* of the Anthropological Institute on the size of the teeth as a racial characteristic; to Prof. A. H. Keane's ethnology of Egyptian Sudan, contributed to NATURE; to E. F. Im Thurn's articles in *Timheri* on the natives of British Guiana; to Dr. Charles Rau's paper on "Pre-historic Fishing," in vol. xxv. of the Smithsonian Contributions to Knowledge; and to A. Chavero's great work on "Mexico à travers los Siglos," the first volume of which is completed, bringing the subject down to the arrival of the Spaniards. It is satisfactory to notice that the Philadelphia Academy of Sciences has created a chair of ethnology and archaeology, to which Dr. Daniel G. Brinton has been appointed. The field of anthropology is now so extensively cultivated in the Old and New World that annual summaries of this sort have become indispensable.

THE Swedish Professor Warming has proceeded to Finmarken in order to study the Arctic flora on the Norwegian coast.

ON July 20 and 21 two terrible cyclones passed over the central part of Sweden, followed by rain and lightning. In several places hundreds of old trees were uprooted, and a clear road made in forests upwards of fifty yards wide. In one place a large wooden snowplough lying by the road was smashed to atoms. Fortunately no one was injured.

AT the University examination just concluded in Copenhagen there were seven lady candidates, all of whom passed, four gaining *præteritis*, two *laudabilis*, and one *haud illaudabilis*. Five of these ladies took the mathematics and natural science degrees, and only two the philological.

DURING the last two years several Celtic tumuli in the district of Geinberg, in Upper Austria, have been opened and found to contain valuable relics of prehistoric times. A few days ago a similar tumulus was discovered near Mattighofen, in the same neighbourhood, and among its contents was found a diadem of pure gold, richly carved in the well-known style of old Celtic art.

MR. DAVID DOUGLAS, of Edinburgh, has issued a new edition of the late Charles St. John's "Tour in Sutherlandshire," a fitting companion to the author's well-known "Wild Sports and Natural History of the Highlands." There is an interesting sketch of the author's life by his son, and a long appendix on the fauna of Sutherlandshire, by Mr. J. A. Harvie-Brown and Mr. S. E. Buckley.

MESSRS. CASSELL & Co. have issued the second part of vol. iv. of their "Encyclopædic Dictionary," extending from "Interlink" to "Melyris." As there is no editor's name on the title-page, we presume that Mr. Robert Hunter, who devised the work, and edited the early parts, is not now connected with it. A work of such minuteness as this ought to have had "Laramie" as a well-known geological term.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* δ) from India, presented by Mr. S. G. Coles; a Persian Gazelle (*Gazella subgutturosa* δ) from Persia, presented by Mr. John Stanley Cater; two Madagascar Porphyrios (*Porphyrio madagascariensis*) from the Gold Coast, West Africa, presented by Mr. E. North Newenham; a Cockatoo (*Calopsitta novaehollandia*) from Australia, presented by Mr. J. Ward; four Martinican Doves (*Zenaida martinicana*), a Moustache Ground Dove (*Geotrygon mystacea*), five Dominican Kestrels (*Tinnunculus dominicensis*), a Violaceous Night Heron (*Nycticorax violaceus*), two — Colins (*Ortyx* — δ δ) from St. Kitt's, West Indies, presented by Dr. A. Boon, M.R.C.S.; a Common Viper (*Vipera berus*), British, presented by Mr. C. Smallman; a Ring-tailed Coati (*Nasua rufa*) from South America, a Golden-crowned Conure (*Conurus aureus*) from South-East Brazil, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, deposited.

OUR ASTRONOMICAL COLUMN

OCCULTATIONS OF VESTA.—The minor planet Vesta will be twice occulted by the moon during the next autumn, and though observation of such a phenomenon is more a matter of curiosity than of astronomical utility, we may note the circumstances of each case. The first occultation will take place on October 27; the planet disappears before the moon is above the horizon at Greenwich and reappears at 7h. 50m. at 204°, less than ten minutes after the moon has risen. The second occultation occurs on November 23, the disappearance at 9h. 25m. on an angle of 28°, the reappearance at 9h. 46m. at 347° from north point, reckoning the angles as in the *Nautical Almanac*. At this time Vesta is near aphelion, and therefore will not be brighter than a star of the seventh magnitude.

ANTHELM'S NOVA OF 1670.—Mr. G. Knott has lately had under observation the small star situated close to the position of the star in Vulpecula discovered by Antheim in June 1670; the star is No. 1814 of the Greenwich Catalogue for 1872. From comparisons made between July 10 and 20, Mr. Knott found it about 10 $\frac{3}{4}$ or 11 mag., and equal to a star following it 12 seconds, and 4'5" to the north. It was estimated of the same brightness in August 1872, but a magnitude brighter in April 1852. In 1861, when it was 12m., Mr. Baxendell remarked that "no adjustment of the focus would bring the star up to a sharp point on the night of June 1," and a week earlier Mr. Hind had noticed "a hazy ill-defined appearance about it, which is not perceptible in other stars in the same field of view."

A rigorous reduction of Picard's observations of Antheim's star, which are printed in Lemonnier's "Histoire Céleste," gives its place for 1670.0—

R.A. 19h. 34m. 5'33s. ... Decl. + 26° 31' 41"5,

the right ascension being the more uncertain element and liable to an error of quite two seconds. Bringing this place up to the beginning of 1872.0 we have—

R.A. 19h. 42m. 21'60s. ... Decl. + 26° 59' 45"4,

which differs - 3'81s. in right ascension and - 33'1" in declination from the Greenwich catalogued position.

In the *Journal des Savans*, 1671, the new star is said to have followed β Cygni on the meridian by 16m. 44s., which would give its right ascension in precise agreement with the Greenwich observations of the small star No. 1814.

THE CINCINNATI OBSERVATORY—The eighth part of the publications of this Observatory has been circulated, and contains the observations of comets made in the year 1883. It is noteworthy as presenting a pretty complete report on the phenomena of Pons' periodical comet of 1812 at its reappearance: the features of the tail were particularly studied, and the discussion of the observations, based upon the theory of Dr. Bredichin, has been found to add confirmation to that theory; they are best satisfied with a value of $1 - \mu$, a little less than 2.5, corresponding to his second type; and this value nearly accords with that inferred by Dr. Bredichin himself in his memoir, "Les syndynames et les synchrones de la comète Pons-Brooks (1883-84)," from a large number of observations by different observers. Thirteen plates form part of this publication, affording highly interesting details on the physical aspect of the comet from October 30, 1883, to January 26, 1884. The drawings were partly made with the 11-inch refractor, and partly with the finder of 2½ inches aperture, and an opera glass. On January 13 the comet was equal in brightness to α Pegasi.

The Cincinnati Observatory is now under the direction of Mr. J. G. Porter. The observations contained in the publication last issued were made by Mr. H. C. Wilson while in temporary charge.

TEMPEL'S COMET, 1867 II.—Dr. Schur searched for this comet unsuccessfully with the great refractor at Strassburg on many evenings in March and April: M. Gautier's calculations showed that the chance of observing the comet at this return to perihelion was but small. The next return, in the spring of 1892, will take place under much more advantageous conditions.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, AUGUST 16-22

(For the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on August 16

Sun rises, 4h. 49m.; souths, 12h. 4m. 1° 0s.; sets, 19h. 19m.; decl. on meridian, 13° 37' N.: Sidereal Time at Sunset, 17h. 1m.

Moon (at First Quarter on August 17) rises, 12h. 3m.; souths, 17h. 10m.; sets, 22h. 10m.; decl. on meridian, 12° 21' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	7 18 ...	13 30 ...	19 42 ...	1° 32' N.
Venus ...	7 24 ...	13 50 ...	20 16 ...	4 25' N.
Mars ...	0 46 ...	9 4 ...	17 22 ...	23 38' N.
Jupiter ...	6 27 ...	13 12 ...	19 57 ...	8 15' N.
Saturn ...	0 32 ...	8 41 ...	16 50 ...	22 28' N.

Occultations of Stars by the Moon

August	Star	Mag.	Disap.	Reap.	Corresponding angles from ver- tex to right for inverted image
			h. m.	h. m.	
20 ...	B.A.C. 6287 ...	6 ...	23 39 ...	0 35*	165° 27'
21 ...	B.A.C. 6292 ...	6 ...	0 8 ...	1 15 ...	115° 32'
22 ...	ρ Sagittarii ...	4 ...	0 35 ...	1 39 ...	157° 29'

* Occurs on the following day.

The Occultations of Stars are such as re-ible at re-enwich.

August	h.	
19 ...	11 ...	Mercury stationary.

GEOGRAPHICAL NOTES

THE Dutch journals contain an account of the Dutch scientific expedition, in March and April last, to examine the upper course of the Surinam River. The members are well satisfied with the result. Their success was due in great part to the rainy season not setting in till towards the end of the journey. They were thus enabled to examine the rocks along the course, which in periods of high water are hidden from view. Their first station was Phædra on the left bank of the Surinam; the next the Tafta Rocks which lie in the middle of the stream. Here they were forced to leave their steamer and continue in a fishing-boat.

At Bergendal they took the height of the neighbouring Blue Mountain, which they ascended, and from which they had a view of the various mountain chains of Surinam. In general the mountains of this region are covered with trees, but the Blue Mountain is quite bare. Near the mouth of the Sara creek the travellers first met some villages of the bush negroes. At Toledo, a negro village, they came to the end of their forward journey. On the return they visited gold fields near Broko Pondo, where they made themselves acquainted with the native methods of washing the gold. From a geological point of view the expedition was fortunate; but the rapid travelling and short stoppages prevented much being done by the zoologist. Professor Martin has made a collection of the rocks in various parts of the Surinam.

WRITING from Ciudad-Bolivar in May, M. Chaffanjon continues his report to the Paris Geographical Society (the first party which we have already referred to) on his exploration of the Orinoco. Since the date of his last letter he made a journey with two Indians of the Arigua tribe up the Caura River to its source. He passed freely through the territory of various tribes, such as the Arebatos, Panares, and others who are notorious for their cruelty, and he obtained from their chiefs a mass of curious information respecting their manners and religious beliefs. In an endeavour to obtain a complete skeleton, he was surprised by a band of Indians, who attacked himself and his followers. He escaped with great difficulty, and accompanied only by one of his guides reached the Caura, and continued his journey, in which he was much impeded by the rains. He was also able to visit and study the Yaruros and Mapayes tribes.

THE last *Bulletin* of the Royal Geographical Society of Belgium (1885, No. 3) contains a paper by the secretary on the Congo question, describing the explorations made in the basin between 1885 and 1877, the formation of the International Association, the creation of the Free State, and finally a description of the basin. M. Lancaster continues his notes on four months' journeyings in Texas, and M. Fontaine contributes a general paper on the geography, productions, trade, &c., of Dutch Guiana.

DR. HAACKE and Dr. Bernays are zoologist and surgeon respectively to the Australian expedition to New Guinea, to which we have already referred. The main objects of the expedition are stated to be to ascertain and fix the geographical features of New Guinea, and the nature of its fauna, flora, geology, and climate. It has been decided to make if possible the Aird river the base of operations.

AT a late meeting of the Geographical Society of Rio de Janeiro M. Alcenar Eraripe read a paper on geographical neology and neography. He referred to the necessity of introducing into geography reforms consisting mainly of the creation of new names and of uniform orthography. His remarks, though of universal application, had especial reference to Brazil. He concluded by suggesting the appointment of a commission to examine the following questions:—(1) Should there be a geographical neology for Brazil—that is to say, a nomenclature for places in the empire in which the repetition of the same name for different places would be avoided by substituting other names? (2) Should there be a geographical neography, or correction of the orthography of geographical names in such a way that the spelling would in all cases be uniform? (3) Assuming these two questions to be answered in the affirmative, how would these reforms be best carried out? The questions were referred to a commission for its report.

THE current number of *Petermann's Mittheilungen* contains a project for a new political map of Africa, with some observations on the principles of political geography, by Prof. Ratzel. This is accompanied by a double map of Africa. In one part the continent is coloured according to the prevailing occupations of the population—agriculture, agriculture with cattle-breeding, pastoral, and the chase; in the second it is coloured according to the people who form states—e.g. Arabs, independent Negroes, Zulus, &c. Dr. Stange writes on the orometry of the Thüringer Wald. The most important paper in the number is that by Dr. Radde, entitled "A Physico-Geographical Sketch of Talsch in the North-Western Elburz," which was originally written for an entomological work being brought out by the Grand Duke Nicholas.

THE last number of the *Mittheilungen* of the Geographical Society of Vienna contains a statement by Dr. Le Monnier with